Claims

We claim:

1) A computer readable medium having computer-executable instructions that when executed by a computer cause the computer to perform a method for determining an optimal test order for diagnosing mutations that relate to a disease, the method comprising:

   a) receiving data indicative of a historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease;

   b) creating a history database, the database comprising a sequence of records based on the data;

   c) receiving new data indicative of the historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease;

   d) applying at least one decision tree algorithm, wherein the at least one decision tree algorithm scores at least a portion of the new data; and

   e) generating a recommendation if the score satisfies a threshold.

2) The computer readable medium of claim 1, wherein applying at least one decision tree algorithm comprises;

   a) accessing a set of records within the history database;

   b) generating at least two strategies from the accessed records;

   c) comparing the at least two strategies against each other; and

   d) calculating the projected cost for the at least one strategy identified by the comparing step.

3) The computer readable medium of claim 2, wherein the threshold is calculated from a pre-selected minimum number of records within the history database.

4) A system for determining an optimal test order for diagnosing mutations that relate to a disease, comprising:

a) a computing environment;

b) an input device, connected to the computing environment for receiving data;

c) an output device, connected to the computing environment, for presenting data; and

d) at least one decision tree algorithm executed based on at least a portion of the data, wherein the at least one of the decision tree algorithms scores at least a portion of the data and determines the optimal test order associated with the at least one decision tree algorithm if the score satisfies a threshold, wherein the optimal test order is presented via the output device.

5) The system of claim 4, wherein the at least one decision tree algorithm further determines a projected cost for each test associated with the optimal test order if the score satisfies a threshold, wherein the projected cost is presented via the output device.

6) The system of claim 4, or 5, wherein the received data comprises the historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease.

7) The system of claim 4, 5, or 6, wherein the at least one decision tree algorithm is specific to hereditary diseases selected from the group consisting of breast cancer, colorectal cancer, lung cancer, prostate cancer, retinoblastoma, and hereditary hemorrhagic telangiectasia.

8) The system of claim 7 wherein the decision tree consists of at least two strategies.

9) The system of claim 8 wherein the at least two strategies are ranked by projected cost.

10) The system of claim 9 wherein the at least two strategies comprise at least two assays.

11) The system of claim 11 wherein the at least two strategies are ranked based on minimum projected cost to perform the at least two medical diagnostic assays.

12) A method of determining the optimal test order for diagnosing mutations that relate to a disease, comprising:

   a) receiving data indicative of a historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease;

   b) creating a history database, the database comprising a sequence of records based on the data;

   c) receiving new data indicative of the historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease;

   d) applying at least one decision tree algorithm, wherein the at least one decision tree algorithm scores at least a portion of the new data; and

   e) generating a recommendation if the score satisfies a threshold.

13) The method of claim 12, wherein applying at least one decision tree algorithm comprises:

   a) accessing a set of records within the history database;

   b) generating at least two strategies from the accessed records;

   c) comparing the at least two strategies against each other; and

   d) calculating the projected cost for the at least one strategy identified by the comparing step.

14) The method of claim 13 wherein the projected cost is calculated from a pre-selected minimum number of records within the history database.

15) A computer readable medium having computer-executable instructions that when executed by a computer cause the computer to perform a method for determining an optimal test order for diagnosing mutations that relate to the disease, the method comprising:

    a)   receiving through an input device, data indicative of the historical frequency distribution of mutations that relate to a disease and the assays required to diagnosis the disease;

    b)   creating a history database, the database comprising a sequence of records based on the data;

    c)   receiving, through an input device, new data indicative of the historical frequency distribution of mutations that relate to the disease and the assays required to diagnosis the disease;

    d)   applying a match pattern to the history database;

    e)   generating a recommendation if a frequency value of matched records located by applying the match pattern satisfies a match threshold; and

    f)   communicating the recommendation through an output device.

16) The computer readable medium of claim 15, wherein applying a match pattern comprises:

    a)   accessing a set of records within the history database by use of a time window, the time window comprising a range of preselected dates;

    b)   comparing the match pattern to each of the accessed records; and

    c)   calculating the frequency value from the matched records identified by the comparing step.

17) A method of determining the optimal test order for diagnosing mutations that relate to a disease, comprising:

    a) receiving, through an input device, data indicative of the historical frequency distribution of mutations that relate to a disease and the assays required to render a diagnosis for the disease;

    b) creating a history database, the database comprising a sequence of records based on the data;

    c) receiving, through an input device, new data indicative of the historical frequency distribution of mutations that relate to a disease and the assays required to render a diagnosis for the disease;

    d) applying a match pattern to the history database;

    e) generating a recommendation if a frequency value of matched records located by applying the match pattern satisfies a match threshold; and

    f) communicating the recommendation through an output device.

18) The method of claim 17, wherein applying a match pattern comprises;

    a) accessing a set of records within the history database by use of a time window, the time window comprising a range of preselected dates;

    b) comparing the match pattern to each of the accessed records; and

    c) calculating the frequency value from the matched records identified by the comparing step.